



Director of
Central
Intelligence

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Soviet Military Production, 1975-86 (U)

Interagency Intelligence Memorandum

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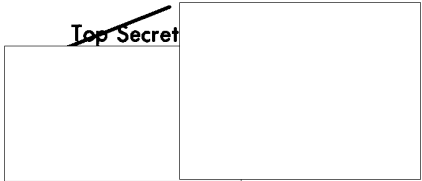
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July 1987

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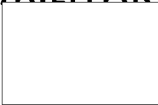
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SOVIET MILITARY PRODUCTION,
1975-86



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Information available as of 31 December 1986 was used in the preparation of this Memorandum, approved for publication on 22 May 1987 by the Chairman of the National Intelligence Council.



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SCOPE NOTE

This Memorandum is the second in a series—the first was published in 1986—that establishes an interagency data base on the annual production of Soviet strategic and general purpose weapon systems and equipment for the period 1975-86. The weapon systems represented here are virtually all of the most significant items of equipment, measured in terms of both the extensiveness of their deployment and the political and military implications they possess. There is overwhelming interagency agreement on both general and specific estimates, although even so, in many cases we have major uncertainties because of limited evidence. There are, however, systems for which the Central Intelligence Agency and the Defense Intelligence Agency (and on a few ballistic missiles, the Bureau of Intelligence and Research, Department of State) differ in their estimates of production. For those cases, the Memorandum details the different methodological approaches and key assumptions that lie behind the two efforts.

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KEY JUDGMENTS

Soviet defense industries exhibit a stability and momentum that has resulted in levels of weapons production that are extraordinary by any standard. [REDACTED]

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This year's Memorandum provides production estimates for over 360 military systems, as compared with the 250 systems found in last year's IIM. It also represents a considerable effort by both CIA and DIA to improve and refine their estimative methodologies. [REDACTED]

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[REDACTED] Among other things, CIA and DIA also more than doubled their production estimates for the SS-N-2 (Styx) antiship cruise missile

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[REDACTED] Both agencies also changed their estimates for tanks and infantry fighting vehicles on the basis of new information and more detailed analysis. Estimates for some armored vehicle programs increased, such as for the T-64B tanks as well as for the BMP-2; and for others—the older T-64A—decreased. In general, CIA and DIA, as the result of close consultations over the past year, are in greater agreement than ever before on their production estimates for Soviet land armaments. [REDACTED]

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CIA and DIA have agreed upon year-by-year production estimates for over 95 percent of the systems covered in this Memorandum, including all spacecraft, space launch vehicles, cruise missiles, surface-to-air missiles (SAMs), antiballistic missile (ABM) interceptors, short-range ballistic missiles (SRBMs), naval ships, artillery, stand-alone radars, and trucks. CIA and DIA (and in a few cases INR) continue to have differing annual production estimates for 12 of the 16 strategic ballistic missiles covered, and CIA and DIA differ on one of the 14 armored vehicles, two of the 38 aircraft, and on ammunition. Despite these differences for particular military equipment, there is nevertheless general agreement on the total number of strategic missiles, armored vehicles, and aircraft produced by the USSR during the period under review. As indicated in tables 1-14, the Soviets during the period 1975-86 produced:

- About 2,050 (CIA) or 2,200 (DIA) intercontinental ballistic missiles (ICBMs) and about 1,450 submarine-launched ballistic missiles (SLBMs). DIA judges that the Soviets have produced substantially more ICBMs since 1980 than does CIA.

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- About 725 (INR), 775 (CIA), or 1,100 (DIA) intermediate-range ballistic missiles (IRBMs).
- About 10,700 SRBMs.
- Some 1,000 manned and unmanned military or joint-use spacecraft, and 1,350 space launch vehicles.
- Some 16,000 cruise missiles.
- About 185,000 crew-served SAMs and 225,000 hand-held SAMs.
- Over 26,000 aircraft, including about 425 strategic bombers, 12,600 fighters, and 10,000 helicopters. About 60 percent of the fighter production and some 50 percent of the helicopter production were delivered to Soviet military forces; the rest was either exported or delivered to the civilian economy.
- Over 1,000 new ships and smaller naval craft, including 124 submarines and 123 major surface combatants.
- About 34,500 (DIA) or 32,500 (CIA) modern tanks, about 62,000 other modern armored vehicles, and 37,000 of their most important field artillery, antiaircraft artillery, and multiple rocket launcher systems. Between 70 and 85 percent of the tanks and artillery produced by the USSR were delivered to Soviet military forces.
- Some 12,800 stand-alone radar systems.
- About 2.4 million trucks for military use, including over 600,000 heavy trucks.

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In every major military equipment category, Soviet production has exceeded that of the United States. Depending on the system, Soviet production rates are as much as seven times greater than US rates. As shown in figure 1, from 1975 through 1985 ¹ the Soviets produced about four times as many ICBMs and SLBMs as the United States, and twice as many nuclear-powered submarines. During this period, the USSR produced some 725 to 1,100 IRBMs and about 375 strategic long- and intermediate-range bombers, whereas the United States produced 156 Pershing II medium-range ballistic missiles and only five strategic bombers (three B-1s and two B-1Bs). In addition, the Soviets produced over seven times as many crew-served, land-based SAMs as the United States, three times as many tanks, and over five times as many major artillery pieces.

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¹ The estimated Soviet data used for these comparisons run through 1985 in order to be compatible with the US data available at the time of drafting.

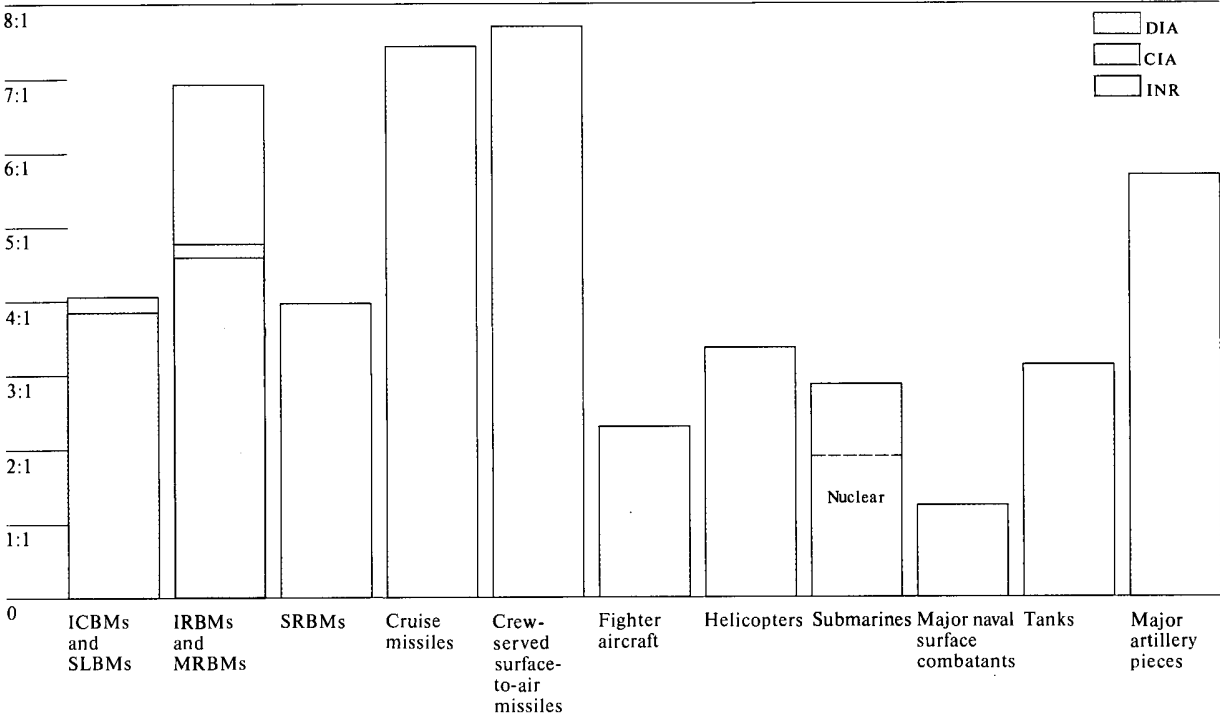
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Figure 1
Ratio of Selected Soviet to US
Cumulative Weapons Production, 1975-85



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Even though we have CIA and DIA agreement on the production estimates for 95 percent of the systems covered in this Memorandum, we emphasize that this agreement should not be taken as an indication that we have high confidence in these estimates. For some we do, for many we do not. Our confidence in these estimates ranges from high—we are confident we are within 10 percent of the actual production figure—for the larger systems that are fixed or take long periods to construct and are easily visible, to low—we could be off by 40 percent or more from the actual number—for generally small, mobile systems.

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Although Soviet weapons production rates remained extremely high throughout the 1975-86 period, as indicated in last year's IIM, we continue to assess that there have been significant reductions in Soviet production rates in several areas during the period, as indicated in figure 2 on page 31. There was:

- A general decline until the mid-1980s in the annual production of ICBMs, and some categories of stand-alone radars.
- A general decline in the annual production of major naval surface combatants.
- A sharp decline in helicopter production from 1976 through 1978 and a leveling off thereafter; a similarly sharp decline in SRBM production through the early 1980s and also a leveling off thereafter; substantial decline in SLBM production since the early 1980s and some upswing beginning in 1984; and substantial decline in yearly production of fighter aircraft, submarines, and armored personnel carriers after 1980.

In contrast, there has been substantial growth in the production of long-range cruise missiles and steady growth in the annual production rates of bombers and heavy trucks. In addition, there was also a steady increase in annual SS-20 production rates into the early 1980s, with differences of view as to the trend in more recent production. Tank production shows no clear trend, and production remains at a high level; production fluctuates as model changes occur.

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Several factors probably are largely responsible for the downward trends described above:

- The Soviets decided to introduce more complex, sophisticated, and capable weapon systems into production. More complex systems embody substantial improvements in performance and can often replace older systems on a less than one-for-one basis. Thus, the Soviets may have deliberately reduced their quantitative requirements for fielding the newer systems.

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- With respect to these more sophisticated systems fielded recently by the Soviets, the most prominent advances have been in the areas of electronic systems and solid propulsion for missiles. In those areas, the Soviets have experienced growing difficulties and delays in development, which have postponed or interfered with intended serial production. One result of these difficulties and delays has been lower production. Programs that should have entered production sooner and begun deployment in this period will not reach their full momentum until later in the 1980s.
- The advanced weapons fielded during the period also have required greater resources and effort and, hence, have been more costly. In the CIA view, though it has no concrete evidence, the burden of these higher costs in some cases may have contributed to Soviet decisions not to sustain production at historical rates. In the DIA view, while higher unit costs of weaponry no doubt concern the Soviets, all available evidence points to decisions concerning the numbers of weapons produced and the timing of such production continuing to be based on other factors such as military policy, doctrine, and strategy.

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The Soviets have responded to these technical challenges by modernizing their defense manufacturing base. We have observed a variety of new materials and manufacturing processes being incorporated in the aircraft, missile, shipbuilding, ground arms, and electronics industries. Moreover, a number of programs have recently completed, or soon will complete, their test phases and will enter serial production.

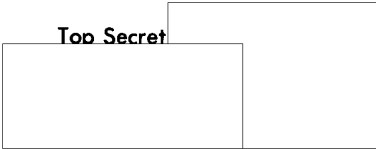
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production capacity has been increased in anticipation of these and other new military programs. These dramatic increases in the strategic missile, spacecraft, aircraft, shipbuilding, and tank industries all indicate that the Soviets will continue to produce substantial numbers of weapons and other major military equipment over the rest of the decade and into the 1990s.

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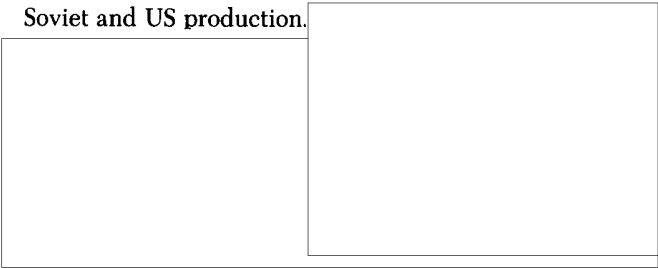


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DISCUSSION

I. Production Estimates and Military Deliveries

1. In the period 1975 through 1986, as in preceding years, the Soviet defense industrial establishment produced an impressive quantity and variety of military hardware. Tables 1 through 14 on pages 10 through 29 present agreed and, where necessary, separate DIA and CIA (and, for a few ballistic missiles, INR) estimates of production during the period covered of what we judge to be the most important weapons and military equipment—virtually all strategic missiles, aircraft, naval ships, tactical missiles, spacecraft, tanks, infantry fighting vehicles, most armored personnel carriers, trucks, artillery, and stand-alone radars.² In this section we outline production trends by type of equipment, estimate the share of production that was delivered to the USSR's military forces, and compare Soviet and US production.



Estimated Soviet Production

Strategic Missiles (see table 1 and figure 2)

2. We estimate that the Soviets produced about 2,050 (CIA) or 2,200 (DIA) ICBMs, about 1,450 SLBMs, and about 725 (INR), 775 (CIA), or 1,100 (DIA) IRBMs during 1975-86. There was a noticeable reduction in the annual rate of production of ICBMs, SLBMs, and IRBMs in the 1980s as the older generation of missiles entered the final phases of their production and production for the next generation began. DIA judges that the Soviets have produced substantially more ICBMs since 1980 than does CIA.

² All production figures cited in this study, including tables 1-14, are end-of-year numbers reflecting the total in each year.

3. Production during this period continued to provide the Soviet strategic missile force with improved accuracy, greater aggregate throw weight, and greater warhead fractionation. The Soviets continue to use their defense industrial base to modernize deployed systems:

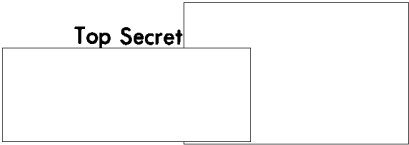
- While the number of ICBM launchers remained virtually constant throughout the period, Soviet defense industries delivered an increasing number of missiles with multiple independently targetable reentry vehicles (MIRVs), causing a steady rise in the inventory of deployed warheads. For ICBMs, the deployed warhead inventory rose an average of about 12 percent per year. While the number of deployed MRBM and IRBM launchers was nearly constant during the period, the number of deployed warheads, on the average, rose 8.5 percent per year because of the introduction of the MIRVed SS-20, which has three reentry vehicles (RVs).
- The Soviets began shifting their missile force from one that is predominantly based on liquid propulsion to one that will rely more heavily on solid-propulsion systems. During this period, the solid-propellant SS-20 IRBM was widely deployed and deployment of the solid-propellant SS-N-20 SLBM and SS-25 ICBM began. However, liquid-propellant systems will remain a major part of the force. In 1986 the Soviets began deploying the new, liquid-propellant SS-N-23 SLBM and began flight-testing the liquid-propellant SS-18 follow on.
- Finally, the Soviets shifted from a strategic ballistic missile force that was overwhelmingly tied to fixed launchers to one that increasingly relied on mobile launchers. There was an 8-percent annual increase in SLBM launch tubes; the mobile SS-20 replaced most of the aging, road transportable SS-4s and all of the SS-5s; and the road-mobile SS-25 began replacing silo-based SS-11s.

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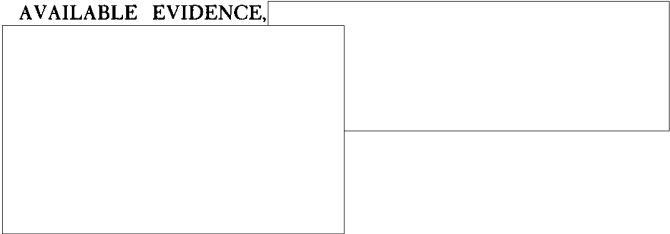
Color Codes for Tables 1-14

The tables represent the total Soviet production of each weapon system or item of military equipment cited, in the period under consideration. These numbers are, in fact, the total amount estimated to have been delivered to Soviet military forces unless some production went for export or was delivered to the Soviet civilian economy. In those cases, a second portion of the table reflects just that amount that was delivered to Soviet military forces, but includes all production used in development and testing programs associated with that system. If a system does not appear in the second portion of a table, all of its production was delivered to Soviet forces.

The color codes displayed in the tables reflect the degree of confidence the analysts have in the accuracy of their estimates. In some cases there is agreement on the estimated numbers but a difference between agencies on the confidence levels. The levels of confidence used in the tables are portrayed as plus or minus a percentage, as follows:

- We are confident the actual production figure does not deviate from the estimated figure by more than plus or minus 10 percent—defined as high confidence.
- We are confident the actual production figure does not deviate from the estimated figure by more than plus or minus 10 to 25 percent—high-moderate confidence.
- We are confident the actual production figure does not deviate from the estimated figure by more than plus or minus 25 to 40 percent—moderate confidence.
- We are not confident the estimate is within plus or minus 40 percent of the actual production figure—low confidence.
- DIA is confident that its cumulative estimate for the period does not exceed the actual number produced by more than 15 percent. However, the actual number produced could exceed the cumulative estimate shown by 25 percent or more.

THE INTERVALS REFLECT THE SUBJECTIVE JUDGMENT OF THE ANALYSTS INVOLVED AND THEIR CONFIDENCE IN THE ESTIMATES BASED ON CONSIDERATION OF ALL AVAILABLE EVIDENCE.



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(Where CIA and DIA have different estimates, the DIA figures are presented first in bold italics followed by the CIA figure in nonitalic bold type. In this table only, figures are presented for INR production estimates in plain italic.)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Cumulative 1975-86
<i>ICBM's</i>													
SS-11 Mod 2/3	100 215	100 180	50										250 ** 395
SS-13	10 12 12	10 16 12	10 20 12	10 23 12	10 26 12	10 28 12	10 31 12	10 12	10				90 ** 156 96
SS-16	20 23 20	20 30 10	30 35 10										70 38 40
SS-17	30 32	35 40	40 48	50 56	55 47	60	40						310 ** 223
SS-18	55 45	60 53	60 64	60 70	60 78	60 38	60 12	60 12	50 12	10 12			535 ** 428
SS-19	45 27	70 55	70 72	70 82	70 92	70 88	70 50	70 40	70 30	45 25	25		675 ** 561
SS-25								5 1 2	10 7 12	25 16 36	60 65 70	100 41 50	200 130 170
SS-X-24 ^b								5	7	10	10	20	52
SS-18 follow-on ^b											3	8	11
<i>SLBM's</i>													
SS-N-6 ^c	35 0												35 0
SS-N-8	110 110	115 115	130 130	100 110	70								525 ** 465
SS-N-17	4	7	10	10	15								46
SS-N-18	5 5	25 25	20 20	50 50	80 80	110 110	140 140	100 170	70				600 ** 600
SS-N-20					1 1 1	10 10 10	15 15 15	20 20 20	20 25 10	25 20 30	30 30 35	40 40 35	161 161 156
SS-N-23									10	20	35	50	115
<i>IRBM's</i>													
SS-20 ^d	25 24 25	50 44 50	90 66 80	110 87 70	110 75 80	110 104 80	120 127 80	120 115 80	120 41 80	125 52 83	110 10 8	20 20 12	1,110 ** 765 728

* BOTH DIA AND CIA AGREE THAT THE CONFIDENCE LEVELS APPLIED TO BALLISTIC MISSILE PRODUCTION ARE PROBABLY SKEWED UPWARD; THAT IS, IT IS MORE LIKELY THE SOVIETS HAVE A GREATER NUMBER OF MISSILES THAN WE HAVE ESTIMATED THAN THAT THEY HAVE FEWER.

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25X1**Table 2**
Soviet SRBM Production

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	Cumulative 1975-86
Total Production													
SS-12	70	70	100	125	125	125	100	100	100	25	25	25	990
SS-21	5	5	10	10	30	60	100	150	200	300	300	300	1,470
SS-23/SS-23 I			5	10	10	10	10	10	15	25	50	80	225
Scud-B	1,000	1,000	1,000	750	750	500	300	200	100				5,600
Frog-7	525	525	525	525	200	100							2,400
Delivered to Soviet Forces (If Different From Total Production)													
Scud-B	800	800	800	600	600	350	150	100	50				4,250
SS-21	5	5	10	10	30	60	100	150	150	250	250	250	1,270
Frog-7	450	375	275	150	150								1,400

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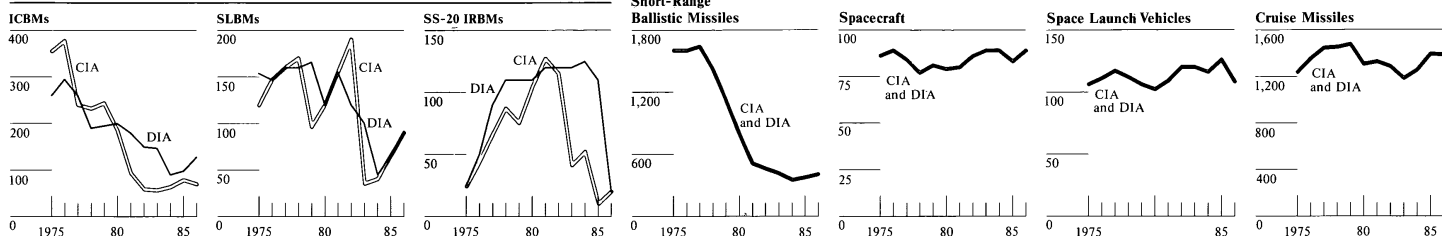
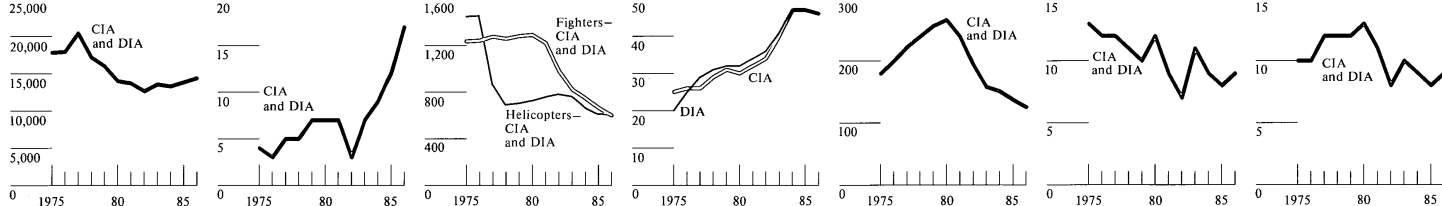
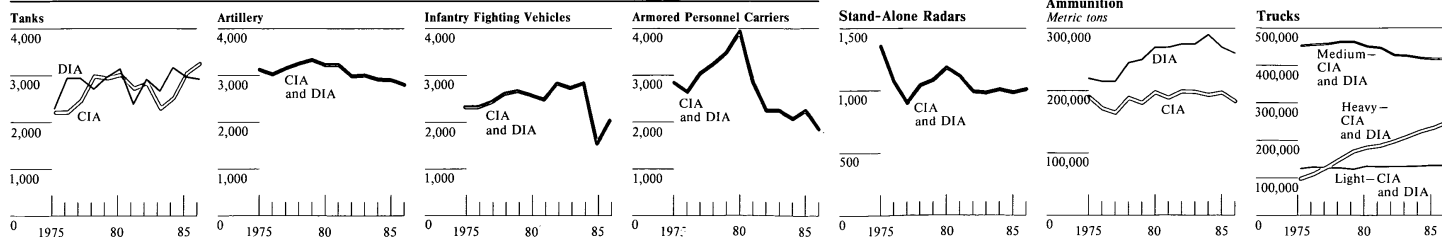
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25X1**Figure 2**
Soviet Military Production, 1975-86

Note scale change

Strategic Missiles**Surface-to-Air Missiles (Crew-Served)****Ground Arms**

Note: Of total 1975-86 production, about 2.4 million trucks were delivered to the Soviet military.

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Short-Range Ballistic Missiles

4. DIA and CIA estimate that the Soviets produced about 2,700 newer SRBMs during the period of this review; these include the modified SS-12, the SS-21, and the SS-23. The SS-23, while not being deployed as rapidly as we had projected in the early 1980s, is to replace a portion of the existing army- and front-level Scud-B forces. This production has initiated what we expect—in the absence of an arms agreement banning such systems—will be a long-term modernization program. The Soviets also produced substantial numbers of older SRBMs—5,600 Scud-B missiles—during the period in support of an expansion in the order of battle and for export. In addition, we estimate that the Soviets produced 2,400 FROG-7 rockets. Nevertheless, the production rates for all SRBMs fell off sharply beginning in the late 1970s, as the production of these older systems phased down.

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Spacecraft and Space Launch Vehicles (see tables 3 and 4 and figure 2)

5. DIA and CIA estimate that the Soviets produced about 1,000 manned and unmanned military or joint-use spacecraft and approximately 1,350 space launch vehicles from 1975 to 1986. The annual production of these satellites and space launch rockets averaged about 85 and 115 units per year, respectively.

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6. During this period, civilian space missions, which had dominated the Soviet space program in the early 1960s, were eclipsed by the rise in military missions. It is now estimated that about 70 percent of space missions are purely military, 25 percent are for dual military and civilian use, and 5 percent are purely civilian. Half the military or joint-use spacecraft produced in 1975-86 had intelligence missions. About one-fifth were for communications satellites.

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Surface-to-Air Missiles (see table 6 and figure 2)

9. We estimate that the Soviets produced about 184,500 crew-served, land-based SAMs from 1975 through 1986, and approximately 225,000 hand-held SA-7 and SA-14 tactical SAM systems.³ Production of crew-served SAMs dropped beginning in 1978 and leveled off in the early 1980s.

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10. The Soviets continue to modernize their air defense forces by deploying a variety of new systems. For tactical missions, they have introduced the SA-11, SA-13, SA-14, and the SA-12a Gladiator, and they continue to test the SA-X-12b Giant; all five of these systems have improved target-detection, range, and target-handling capabilities. Cumulative production of hand-held SAMs peaked in the late 1970s and then

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Cruise Missiles (see table 5 and figure 2)

7. From 1975 through 1986, we estimate that the Soviets produced about 16,000 air- and sea-launched cruise missiles (ALCMs and SLCMs) of various ranges, but mostly short range, an average of about 425 ALCMs and 950 SLCMs per year. In addition, the Soviets produced approximately 400 antisubmarine-warfare (ASW) missiles—the SS-N-15 and SS-N-16. Production of ALCMs dropped in about 1980 as

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declined as production of the older SA-7 phased out and the newer SA-14 increased gradually. Procurement for Soviet forces decreased during the period of the model changeover, but by 1986 it was approaching former levels. The SA-12 systems in particular, with their multiple-target-handling capability, will significantly improve the overall defense capabilities of the ground forces. They can engage conventional aircraft, cruise missiles, and tactical ballistic missiles. In addition, we judge that the SA-12 may have capabilities against some strategic ballistic missile RVs as well. The SA-13 has greater missile range, more lethal warheads, better defense against countermeasures, and better vehicle mobility than the SA-9 it replaces. For strategic missions, the SA-10 has consolidated many of the functions of the older SA-2 and SA-3 systems with significant improvements in detection, range, and target-handling capabilities.

Antiballistic Missile

11. DIA and CIA estimate that the Soviets produced about 86 antiballistic missile (ABM) interceptor missiles during the period under review. These include the SH-4, SH-8, and SH-11. Production rates are increasing as the SH-8 program moves toward series production.

Aircraft

12. DIA and CIA estimate that the Soviets produced about 12,600 fighters, about 10,000 helicopters, about 425 long- and intermediate-range bombers (TU-95 Bear H, TU-160 Blackjack, and TU-22M Backfire), about 1,100 shorter range fighter-bombers (SU-24 Fencer), and about 2,350 transports (excluding exclusively civilian versions) during the period 1975-86. Fighter production is estimated to have been nearly constant through 1980. Thereafter, aggregate annual production declined sharply so that by 1986 the Soviet aircraft industry was producing

half as many fighters per year as it had in 1980. Long- and intermediate-range bomber production rose in the 1980s with the introduction of the ALCM-carrying Bear H. Production of military transports increased through 1980. The subsequent decline in rates of output is due to reduced production of the AN-26 Curl, TU-134 Crusty, and IL-62 Classic. Helicopter production fell from a peak of about 1,450 units per year in 1976 to an average of about 700 per year over the last eight years, due largely to the cutback in MI-8 Hip production.

13. The fall in production rates for fighter aircraft coincided with the introduction of the more advanced, much more capable MIG-31 Foxhound, MIG-29 Fulcrum, and SU-27 Flanker aircraft. Although we have good evidence of the substantial downturn in helicopter production, we are uncertain as to the underlying reasons.

14. The capability of Soviet aviation assets to provide fire support to ground forces has been enhanced in part through the establishment of a sizable attack/assault helicopter force. Such variants of the MI-24 Hind and the MI-8 accounted for approximately 70 percent of all helicopter deliveries to Soviet forces during the past 12 years. Although there has been only a slight increase in the overall totals of fighter bombers, and ground attack aircraft assigned to Soviet forces during this 12-year period, the fire-support capabilities of these forces have increased significantly. Further, continued procurement of the SU-25 Frogfoot—a dedicated ground attack aircraft—since early 1982 has impacted favorably on Soviet ground attack capabilities. Although procurement of new Flogger and Fitter aircraft for Soviet forces has essentially ended, we anticipate development and procurement of MIG-29 Fulcrum and SU-27 Flanker variants as the Soviets continue to enhance the fire-support capabilities of their aviation assets.

Naval Ships (see table 9 and figure 2)

15. We estimate that the Soviets produced 124 submarines and 123 major surface combatants from 1975 through 1986. In addition, 22 submarines and 13 major surface combatants underwent conversion.⁴

⁴ A conversion is a significant alteration in a weapon or sensor resulting in a change of mission or configuration, as where an SSBN becomes an attack or general purpose unit (SSN).

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The Soviets also produced 107 minor surface combatants, over 350 coastal patrol craft, 165 mine warfare ships and craft, 75 auxiliary ships, and 57 amphibious ships and craft during the period. Annual submarine production averaged over 11 units through 1981, then fell to about nine from 1982 on. Production of major surface combatants decreased, falling from an average of 12 units per year through 1980 to an average of about nine per year from 1981 on. The downward trend in unit production has coincided largely with an upward trend in total ship tonnage produced per year:

- Unit production of nuclear-powered cruise missile submarines (SSGNs) fell off sharply after 1980 as construction of the larger, more capable Oscar superseded that of the Charlie-II.
- Soviet production of nuclear-powered ballistic missile submarines (SSBNs) reached its highest plateau during the 1970s, when the Soviets produced six or seven units per year. Since 1977, SSBN production has remained roughly constant at two per year. This decline in unit production was matched by a decline in tonnage production, which reached its lowest point in 1982. Since then, tonnage has increased again—not because of increased numbers, but because of the introduction of the large Typhoon SSBN.
- While unit production of major surface combatants has fallen, annual tonnage produced has remained roughly constant throughout the period. This is due to the increased displacement of the newer classes, such as the Kirov nuclear-powered guided-missile cruiser (CGN), the Slava guided-missile cruiser (CG), and the Udaloy and the Sovremennyy guided-missile destroyers (DDGs).

16. The period has seen significant advances in the Soviet quest for a blue-water navy capable of power projection and of performing its wartime missions in an extended conflict. In 1975, sea trials began for the first Soviet carrier to operate vertical/short-takeoff-and-landing (V/STOL) aircraft—the Kiev CVHG. In 1980, sea trials commenced for three new classes of Soviet major surface combatants: the Kirov, the Udaloy, and the Sovremennyy. In 1982 the Soviets sent the first unit of the Slava-class CG on sea trials. In December 1985 they

launched their largest aircraft carrier

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17. While the Soviets have been building larger and more capable major surface combatants, construction of large amphibious ships has lagged; the Polish-built Ropucha, and the Rogov-like amphibious assault transport dock (LPD) under construction at Kaliningrad are the only large amphibious ship classes currently being produced for the Soviet Navy. During the period under review Poland has produced approximately 85 percent of Soviet naval amphibious ships. However, given the expansion of air-cushion vehicle (ACV) production facilities at Feodosiya and Leningrad, the Soviets may plan to increase production of such vehicles and could begin series production of wing-in-ground (WIG) effect vehicles; both types of vehicles have amphibious missions.

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18. Naval auxiliaries have not been produced in the quantities or with the increased capabilities observed for the rest of the surface fleet. Polish yards supply approximately 40 percent of the Soviet auxiliaries. East Germany, Romania, and Finland also supply auxiliaries to the Soviets. Moscow probably intends to compensate for an inadequate logistic support force by relying on its large modern fleet of merchant ships.

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19. The Soviets have made major qualitative improvements to their submarine fleet. With their titanium pressure hulls, the Alfa, Mike, and Sierra nuclear attack submarines (SSNs) can dive deeper and have lower magnetic signatures than previous SSN classes. High-density power plants permit some of the newer classes to travel faster. Of far greater significance, however, are the newer classes'

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more sophisticated sensors and weapons suites. The classes introduced since 1980—the Akula and Sierra SSNs, the Oscar SSGNs, the Delta-IV and Typhoon SSBNs

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The Soviets are also greatly improving their tactical weapons suites. The newer SSNs can carry greater numbers of larger (65-cm diameter) and more capable torpedoes and torpedo-tube-launched missiles, such as wake-homing torpedoes and the SS-N-15 and SS-N-16 ASW missiles. The SSBN fleet carries far more warheads and is less vulnerable to attack because the new submarines carry MIRVed missiles

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with significantly greater range capabilities that would permit launching against targets in the continental United States from protected waters. []

Ground Arms []

20. **Tanks.** We estimate that the Soviets produced about 32,500 (CIA) or 34,500 (DIA) tanks from 1975 to 1986—an average of 2,700 (CIA) or 2,850 (DIA) annually. Tank production shows no clear trend, and production remains at high levels; production fluctuates as model changes occur. Production rates ranged from as low as 2,200 (CIA) or 2,300 (DIA) in 1975 to as high as about 3,200 in 1984 (DIA) or 1986 (CIA). The Soviets continue to modernize their tank inventory by producing the T-80, the T-64B, the T-72M1, a new variant of the T-72 currently designated the M-1986 by NATO, and their latest tank to reach production, which we call the "future Soviet tank" or FST 1. These new tank models, as compared to the older T-54/55s and T-62s, provide increased firepower, improved armor protection, and greater mobility; however considerable resources are being dedicated to an upgrade program for the older models as well. []

21. **Infantry Fighting Vehicles.** The Soviets produced about 29,600 infantry fighting vehicles (IFVs) during the 1975-86 period or about 2,450 IFVs annually.⁵ Production dropped from a high of nearly 2,850 vehicles in 1982 and 1984 to about 1,500 units in 1985 and 2,000 in 1986. The decline stems from the abrupt termination of BMP-1 production and the gradual increase in production of the BMP-2, which is equipped with a new 30-mm automatic cannon. []

22. **Armored Personnel Carriers.** The Soviets produced about 33,000 armored personnel carriers (APCs) and similar vehicles during this period, or about 2,750 units per year. Production rates have ranged from a high of nearly 4,000 vehicles in 1980 to 1,850 units in 1986 following an abrupt decline in 1981 and 1982 as BTR-70 production was reduced. []

23. **Artillery.** We estimate that the Soviets produced about 37,000 of the most important field artil-

⁵ The production estimates in this paper do not include several specialized command and reconnaissance vehicles mounted on the BMP chassis. []

lery, antiaircraft artillery and multiple rocket launcher systems during 1975-86 or about 3,100 units per year.⁶ Although artillery production remained essentially constant throughout the period, output of modern self-propelled models increased. []

Stand-Alone Radars (see table 12 and figure 2)

24. We estimate that the Soviets produced 12,800 stand-alone radar systems during the period, averaging about 1,050 units per year. The production rates of these radars has been steady since the early 1980s. Production of non-SAM-associated radars had peaked by 1975 with about 1,100 units produced, but production rates for these radars have since declined by about one-fourth as more modern, complex radars have been introduced. Of the 30 non-SAM-associated radar systems included, 15 began production during the period under review. The newer systems provide the Soviets with greater detection ranges, and target-discrimination and target-handling capabilities, and have introduced computer-processing and microelectronics technologies, probably for the first time, to the Soviet radar industry. For example, many new models are three-dimensional radars that combine the range, azimuth, and altitude search functions. The combination of these functions in a single radar, together with greater target-handling capabilities, reduces the need for greater production. []

Ammunition []

25. The Soviets produced about 2.3 million (CIA) or 3.1 million (DIA) metric tons of ammunition during the period. In the DIA view, ammunition production rose from roughly 215,000 metric tons in 1976 to 290,000 metric tons in 1984 and declined somewhat thereafter. In the CIA view, ammunition production has been nearly steady over the period at between 165,000 and 200,000 metric tons. However, both agencies have some reservations about these assessments and have work under way to reevaluate Soviet ammunition production. See pages 73 to 74 for a more thorough discussion of these issues. []

Trucks []

26. We estimate that the total annual production of the types of trucks used by the military—which are similar to those used in the civilian economy—rose by about 2 percent per year, from about 696,000 in 1975 to about 825,000 in 1986. Most of these are delivered

⁶ This estimate accounts for all major artillery systems produced during the period, but excludes all crew-served infantry weapons such as ATGMs, rocket-propelled grenade launchers (RPCs), recoilless weapons, towed antiaircraft artillery and most mortars. []

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to the civilian sector (or exported), although in war-time many of these would be mobilized.

27. The start of Kama heavy-truck production in 1976 inaugurated a shift toward heavy-truck deliveries to the military. In addition to providing increasing lift capacity to the forces, many models produced during the period have incorporated all-wheel drive for improved mobility. The greater use of diesel engines, moreover, should serve to cut maintenance requirements, improve fuel efficiency, and increase service life.

Deliveries to the Soviet Military

28. Most, but not all, of the production described in this Memorandum was used to expand and modernize Soviet military forces (see figure 3). All strategic missiles and long- and intermediate-range bombers were delivered to the military for deployment or for testing, as were most ships (two classes of submarines were exported). About 60 percent of the fighter production and some 50 percent of the helicopter production were delivered to Soviet military forces; the rest was either exported or, in the case of helicopters, delivered to the civilian economy.

29. The greater proportion of the land-arms production for this period was also delivered to the Soviet military. Both the CIA and DIA estimates of tank and artillery production indicate that the Soviets delivered between 70 and 85 percent of total production—depending on the item of equipment involved—to their own forces. About 65 percent of the crew-served SAMs produced by the Soviets was also delivered to their own forces during the period. As noted above, only a fraction of the trucks produced are delivered to the military.

30. **Imports.** In the period 1975 through 1986, the Soviet Union also imported significant quantities of military weapons and equipment. This materiel includes:

- A total of 142 new amphibious warfare and auxiliary support ships. These vessels were delivered from shipyards in Poland, the German Democratic Republic, Romania, and Finland. We estimate that Soviet imports account for 25 percent of the amphibious warfare ships and craft and nearly 60 percent of the auxiliary support ships delivered to Soviet forces during the period.
- About 3,050 MI-2 Hoplite helicopters produced in Poland, of which nearly 1,450 were delivered to the Soviet military.

— Over 11,000 armored vehicles. The Soviets imported 4,000 BMP-1 infantry fighting vehicles from Czechoslovakia, 2,900 BTR-70 armored personnel carriers from Romania, and approximately 4,500 MTLBs (a tracked personnel carrier/prime mover) from Poland and, later, Bulgaria.

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31. The Soviets import military equipment for a number of reasons including:

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— Soviet imports of military equipment help to offset the balance of payments from their East European allies. Payment by the Soviets for this hardware probably takes the form of oil, raw materials, or sophisticated military equipment such as fighter aircraft.

— The Soviets probably judge that it is to their advantage to expand, as much as possible, their sources of military materiel. Additionally, specialization probably enables larger production runs and increased efficiency for the Warsaw Pact as a whole.

— Use of the East European arms industry helps to free up Soviet production floorspace for higher priority or more technologically sophisticated weapons programs.

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— Soviet reliance on shipyards located in Eastern Europe and Finland that are capable of building seagoing vessels on a world-class level provides the Soviets with useful conduits for acquiring Western shipbuilding technologies, design concepts, and manufacturing expertise.

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32. **Exports.** The Soviet Union has exported vast quantities of military weapons and equipment to the Warsaw Pact and Third World countries. For example, during the period 1975-86, we estimate that the Soviets exported:

- Some 14 submarines and 19 major surface combatants.
- Over 4,000 T-72 series tanks.
- About 5,200 BTR-60 APCs.
- About 2,400 122-mm D-30 towed artillery pieces.
- Nearly 2,100 122-mm BM-21 multiple rocket launchers (MRLs).
- About 14,000 SA-6 and nearly 19,000 SA-9 surface-to-air missiles.

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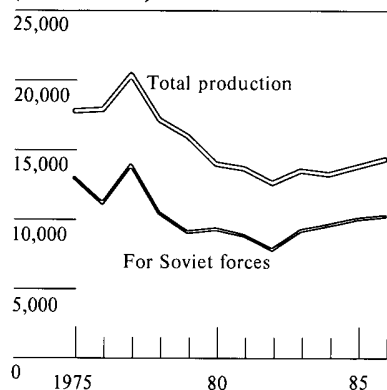
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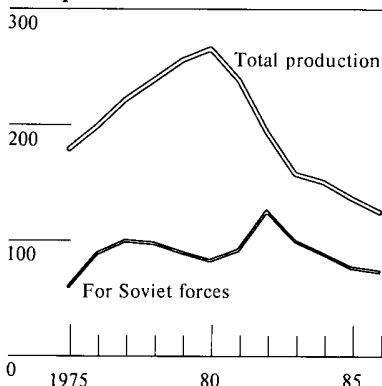
Figure 3
Annual Total Soviet Military Production and
Deliveries to Soviet Forces, 1975-86

Note scale change

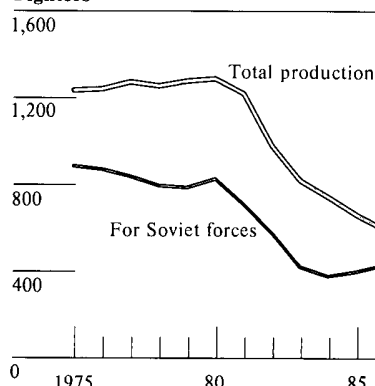
Surface-to-Air Missiles
(Crew-Served)



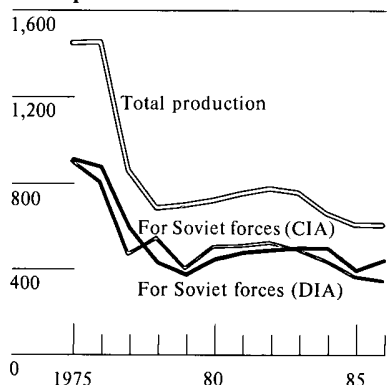
Transport Aircraft



Fighters



Helicopters



Tanks (CIA)



Tanks (DIA)



Artillery



Armored Personnel Carriers



Note: Deliveries to Soviet Forces include imports of armored vehicles from Poland, Romania, and Bulgaria.

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- Some 1,450 SS-N-2 naval cruise missiles.
- Over 2,050 MIG-21 Fishbed fighters and almost 600 MI-24 Hind helicopters.

Soviet-US Comparative Performance

37. We estimate that Soviet weapons production rates exceeded those of the United States by a factor of from 1.25 for major surface combatants up to 7.7 for surface-to-air missiles (see figure 1, page 5). In no case did the United States produce more than the Soviets. Differences in production emphasis partially reflect differences in the US and Soviet military posture. For example, from 1975 through 1985:

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- The USSR produced about 725 (INR), 750 (CIA), or 1,100 (DIA) IRBMs, while the United States produced 156 Pershing II medium-range ballistic missiles (MRBMs) and no IRBMs.

- The USSR produced about 375 long- and intermediate-range bombers, while the United States produced three B-1 and two B-1B bombers.

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38. A comparison of other weapons shows similar results. From 1975 through 1985, the Soviets produced:

- About 170,000 crew-served, land-based SAMs, while the United States produced slightly over 22,000.

- About 14,700 cruise missiles, while the United States produced about 2,000.

- About 13,000 fighter/attack aircraft, while the United States produced about 5,650.

- About 9,400 helicopters, while the United States produced 2,800.

- A total of 115 submarines—76 of which are nuclear powered—while the United States produced 40, all nuclear powered.

- Approximately 31,500 (DIA) or 29,500 (CIA) tanks, while the United States produced about 10,000. At their respective peak production years for the period, the United States produced 1,200 tanks in 1978 and 1983, while the USSR produced about 3,200 tanks in 1984 (DIA) or 1986 (CIA).

- About 34,000 major artillery pieces, while the United States produced slightly over 6,000.

We note however that for many of these, Soviet production is intended for export or civilian customers (see paragraph 32). Some of the US production is also for foreign sales.

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II. CIA and DIA Production Estimation: Methodologies and Differences

39. The production estimates presented in this Memorandum reflect considerable agreement within

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the US Intelligence Community. Single agreed estimates have been formulated for the production of each class/type of ships, cruise missiles, SAMs, ABM interceptor missiles, SRBMs, artillery systems, spacecraft, and space launch vehicles, trucks, and stand-alone radars covered in this review. Additionally, there is close agreement on the 1975-86 cumulative production of many other types of equipment. [redacted]

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40. There are some specific differences in such categories as strategic ballistic missiles, aircraft, armored vehicles, and ammunition. These differences are primarily judgmental, caused by the use of different methodologies applied to the same evidence. The discussion below describes those methods and interpretations of evidence that lead to differences in the CIA and DIA—and, in the case of a few ballistic missiles, INR—production estimates. Also, we have included discussion of those few production estimates that have changed substantially since last year's IIM because of new analysis or evidence. [redacted]

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